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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/817,461

04/02/2004

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EXAMINER

NGUYEN, HUY TRAM

ART UNIT

PAPER NUMBER

1709

MAIL DATE

DELIVERY MODE

06/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/817,461	Applicant(s) WAGNER, ANTHONY S.	
	Examiner Huy-Tram Nguyen	Art Unit 1709	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 9-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 and 13 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>July 13, 2004 and May 10, 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-8, drawn to a molten metal reactor, classified in class 422, subclass 159.
- II. Claims 9-16, drawn to a feed structure, classified in class 222, subclass 591.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination II has separate utility such as a feed material inlet to the feed chamber in which it is substantially aligned with the feed chamber outlet that is not claimed in subcombination I. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to

provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

A telephone call was made to applicants' representative, Mr. Russell Culbertson on May 30, 2007 on the above restriction. A provisional election was made with traverse to prosecute the invention of Group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-16 are withdrawn from

further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Specification

The disclosure is objected to because of the following informalities: typo on Page 12, Line 21 because the correct numeral for treatment chamber is 12. Numeral 11 is used for feed chamber. Appropriate correction is required.

Claim Objections

Claim 1 is objected to because of the following informalities: per specification Page 9, Line 17-18 and 21, supply chamber 31 is connected to feed chamber 11, not treatment chamber 12. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by **Shultz (US Patent No. 5,640,702)**.

Regarding Claim 1, Shultz reference disclose a molten metal reactor (**See Figure 1, numeral 10**) including:

(a) a treatment chamber having a treatment chamber inlet (**See Figure 1, numeral 54 – return channel**);

(b) a molten reactant metal flow inducing arrangement for inducing a flow of molten reactant metal into the treatment chamber through the treatment chamber inlet (**See Figure 1, Letter A and arrows**);

(c) a feed chamber having a feed chamber outlet located adjacent to the treatment chamber inlet (**See Figure 1, numeral 38 – liquid metal application chamber**);

(d) an output chamber connected to an outlet of the treatment chamber to receive molten reactant metal and reaction products from the treatment chamber (**See Figure 1, numeral 44 – reservoir**) ; and

(e) a supply chamber connected to the output chamber and to the treatment chamber (**See Figure 1, numeral 40 – insulated reservoir**).

The molten metal reactor of Shultz is structurally capable of performing the claimed intended use.

Regarding Claim 2, Shultz reference discloses the molten metal reactor of Claim 1 wherein the feed chamber outlet and the treatment chamber inlet comprise a common opening (see Figure 1, opening from 38 to 54).

Regarding Claim 4, Shultz reference discloses the molten metal reactor of Claim 2 wherein the feed chamber comprises a bowl shaped chamber and the feed chamber outlet is located in substantially the center of the bowl shape at a bottom of the feed chamber (**see Figure 1, numeral 38**).

Regarding Claim 7, Shultz reference discloses the molten metal reactor of Claim 1 wherein at least a portion of the treatment chamber is in a heat transfer relationship with the supply chamber (**See Figure 1, numeral 70 – heating means**).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shultz (US Patent No. 5,640,702) in view of Wagner (US Patent No. 5,564,351).

Regarding Claim 3, Shultz reference discloses the claimed invention of Claim 2 except for the vortex inducing arrangement for inducing a swirling flow in the feed chamber outlet. Wagner reference teaches that it is known to use a stirrer to mix the molten metal and will create a swirling flow in the feed chamber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the stirrer as taught by Wagner, since Wagner reference states at Column 3, Line 7-10 that such a modification would mix the molten metal to prevent excessive cooling below the melting and decomposition.

Regarding Claim 5, Shultz reference discloses the claimed invention of Claim 2 except for the an impeller mounted in the feed chamber and adapted to be rotated about a substantially vertical axis. Wagner reference teaches that it is known to use the similar vertical stirrer with motor driven. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the stirrer as taught by Wagner, since Wagner reference states at **Column 3, Line 13-15 and Figure 1, numeral 13** that such a modification would prevent any outward seal leakage.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shultz (US Patent No. 5,640,702) in view of Clumpner (US Patent No. 4,179,102).

Regarding Claim 6, Shultz reference discloses the claimed invention of Claim 2 except for the swirling flow in the feed chamber by the off-center molten reactant metal inlet. Clumpner reference teaches that it is known to position an liquid inlet to the sidewall of a cylindrical chamber to create a swirling flow (**See Figure 3**). It would have been obvious to one having ordinary skill in the art at the time the invention was made to design the inlet as taught by Clumpner, since Clumpner reference states at **Column 3, Line 15-19 and Line 29-31** that such a modification would provide an improved fluxing gas inlet which minimizes fluxing gas bubble coalescence and thereby improve the efficiency of the kinetics of the adsorption gases.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shultz (US Patent No. 5,604,702) in view of Gluntz (US Patent No. 5,353,318).

Regarding Claim 8, Shultz reference discloses the claimed invention of Claim 1 except for the gravity trap within the treatment chamber. Gluntz reference teaches that it

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is known to use a similar U-shaped trap (**See Figure 3, numeral 84**). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the U-Shaped trap as taught by Shultz, since Shultz reference states at **Column 7, Line 30-35** that such a modification would prevent escape of the non-condensable gas.

Conclusion

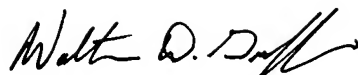
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huy-Tram Nguyen whose telephone number is 571-270-3167. The examiner can normally be reached on M - F : 7:30 AM - 5:00 PM (Alternated Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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HTN
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A handwritten signature in black ink, appearing to read "Walter D. Griffin". The signature is fluid and cursive, with a prominent initial "W" and a long, sweeping underline.

WALTER D. GRIFFIN
SUPERVISORY PATENT EXAMINER